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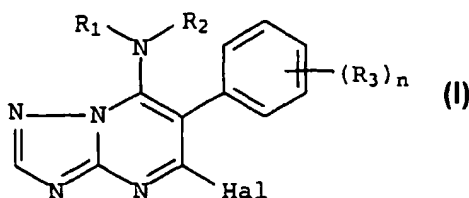
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(54) Title: FUNGICIDAL FORMULATION



use in the control of photopathogenic fungi.

(57) Abstract: Adjuvants selectes from mon/ionic water/soluble mixed polyalkoxy-lated aliphatic alcohol surfactants, non-ionic water soluble ethoxylated aliphatic alcohol surfactants, amine ethoxylates, and micronized polymeric waxes enhance the efficacy of fungicidal triazolopzrimidines of structural formula I. They can be incorporated into formulations of the fungicidal compounds or be added to spray mixtures (tank mix) as separately formulated additives in order to improve the efficacy and spectrum of these fungicides. This invention also provides fungicidal compositions of said triazolopzrimidines and adjuvants, as well as methods for their

Fungicidal formulation

Description

5

As a rule, inert carrier ingredients must be used to bring crop protection agents, for example, fungicidal compounds, into a form that the user can apply them either as such, or after dilution with water. The choice of formulation type and inert ingredients
10 for that formulation type often determines to a significant extent whether the active ingredient can display its full activity on application.

The efficacy of the active components can often be improved by
15 addition of other (active) ingredients. The observed efficacy of the combination of ingredients can sometimes be significantly higher than that would be expected from the amounts of the individual ingredients used, thus indicating synergism from the components of the combination.

20

The usual components of formulations such as carriers and inert ingredient (e.g. organic solvents, suspension agents, emulsion agents, wetting agents, solubilizing agents) which do not themselves possess pesticidal activity, however, do not usually lead
25 to an unexpected increase in efficacy.

International Patent Application WO 95/01722 discloses pesticidal formulations containing non-ionic surface-active agents which can be selected, inter alia, from liquid polyalkoxylated aliphatic
30 alcohols. However, the addition of these agents is directed to improving the storage stability of the formulations, and there is no report of enhancing the activity of fungicides used in the formulations.

35 U.S. Patent 4,851,421 discloses the use of polyalkylene-type non-ionic surface active agents derived from the alkoxylation of fatty alcohols with alkyleneoxides, polyoxyalkylene mono- or dialkylphenylether or polyoxyalkylene sorbitan fatty acid esters.

40 It is an object of this invention to provide methods for further enhancement of the efficacy of said fungicidal triazolopyrimidines. It is another object of this invention to provide fungicidal compositions of said triazolopyrimidines and adjuvants, as well as methods for their use in the control of phytopathogenic fungi.

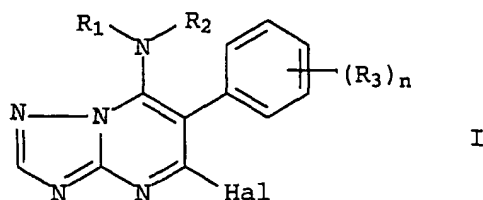
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There is ongoing research to identify suitable adjuvants which combination with the active fungicidal ingredient provide a means to lower the dose of active fungicidal agent required for effective disease control. This goal is desirable from both an economic and an environmental standpoint.

EP-A 71 792 and EP-A 550 113 disclose fungicidal triazolopyrimidine compounds. EP-A 943 241 describes the enhancement of the fungicidal efficacy of said triazolopyrimidines by the addition of selected adjuvants from the liquid polyalkoxylated aliphatic alcohol class.

It has now been found that the effective amounts of fungicidal triazolopyrimidines of formula I



in which

R^1 and R^2 independently denote hydrogen or

C_1 - C_{10} -alkyl, C_2 - C_{10} -alkenyl, C_2 - C_{10} -alkynyl, or C_4 - C_{10} -alkadienyl,

C_3 - C_{10} -cycloalkyl, phenyl, naphthyl, or

5- or 6-membered heterocyclyl, containing one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom, or

5- or 6-membered heteroaryl, containing one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom, or

where R^1 and R^2 radicals may be unsubstituted or may carry one to three groups R^a ,

R^a is cyano, nitro, hydroxyl, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_6 -cycloalkyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy, C_1 - C_6 -alkylthio, C_1 - C_6 -alkylamino, di- C_1 - C_6 -alkylamino,

3

C₂-C₆-alkenyl, C₂-C₆-alkenyloxy, C₂-C₆-alkynyl,
C₃-C₆-alkynyloxy and C₁-C₄-alkylenedioxy; or

5 R¹ and R² together with the interjacent nitrogen atom represent a 5- or 6-membered heterocyclic ring, containing one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom, which may be substituted by one to three R^a radicals;

10 R³ represents halogen or C₁-C₆-alkyl or C₁-C₆-alkoxy;

n represents an integer from 0 to 5; and

Hal represents halogen;

15

which must be applied can be lowered considerably with respect to the amounts usually employed to achieve the same fungicidal effect, if these fungicidal compounds or their formulations are applied in combination with one or more adjuvants selected from

20 the groups consisting of

a) non-ionic water-soluble mixed polyalkoxylated aliphatic alcohol surfactants,

25 b) non-ionic water soluble ethoxylated aliphatic alcohol surfactants,

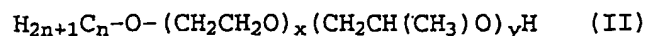
c) amine ethoxylates, and

30 d) micronized polymeric waxes.

The biological activity of the active ingredient of formula I can be increased by including any of these adjuvants in the spray dilution or directly in the formulation. An adjuvant is defined
35 here as a substance which can increase the biological activity of an active ingredient but is not itself significantly biologically active. The adjuvant can either be included in the formulation or can be added to the spray tank together with the formulation containing the active ingredient. The water-soluble mixed polyalk-
40 oxylated or ethoxylated aliphatic alcohols are particularly useful for liquid formulations, in particular for aqueous suspension concentrates (SC). The mixed polyalkoxylated adjuvants are obtainable by alkoxylation of fatty alcohols having 8-18 C-atoms, with alkylene oxides having 2-6, preferably with a mixture of
45 ethylene oxide and propylene oxide. The aliphatic moieties of the said fatty alcohols may be straight-chained or branched. The ethoxy to propoxy ratio is from 50:50 to 90:10. Preferred water

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soluble non-ionic surfactants of the mixed alkoxyated aliphatic alcohol class are mixed random or block oligomers of formula II



5

wherein

n is an integer from 8 to 18;

x is an integer from 3 to 10; and

y is an integer from 1 to 3.

10

Of particular interest are those water soluble mixed polyalkoxyated aliphatic alcohols which are commercially available under the trademark Plurafac® LF (Tensid-Chemie, Köln / BASF AG, Ludwigshafen). In particular Plurafac® LF 300 has been proven to be especially advantageous.

15

The water soluble polyethoxylated adjuvants are obtainable in similar fashion and are straight chained or branched C₁₀₋₂₅ alcohols ethoxylated with 10 to 25 ethoxy groups. Particularly preferred is Lubrol® 17A17, commercially available from Uniqema, Everberg, Belgium.

20

The amine ethoxylate adjuvants are tertiary amine ethoxylates based on primary amines such as oleyl amine and tallow amine. Particularly preferred are those commercially available under the trademark Berol 381® and Berol 303® (Ethomeen® S22) from Akzo Nobel Surface chemistry, Sweden.

25

A particularly preferred micronized polymeric wax is a modified polyethylene wax commercially available under the trademark ®Ceridust 9615A from Clariant GmbH, Augsburg, Germany.

30

The enhancement in efficacy by addition of the said adjuvants can be observed for the fungicidal triazolopyrimidines of formula I, preferably, wherein

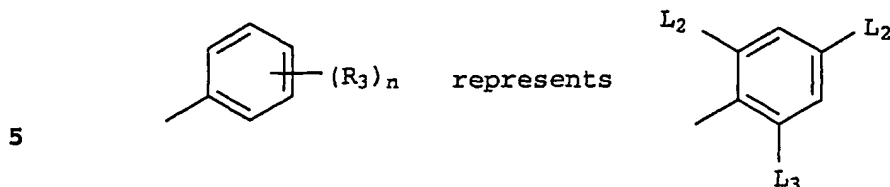
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R¹ and R² together with the adjacent nitrogen atom represent an optionally substituted 6-membered heterocyclic ring, or wherein R¹ represents a C₁₋₆-alkyl, a C₁₋₆-haloalkyl, in particular C₁₋₆-fluoroalkyl, or a C₃₋₈-cycloalkyl group and R² represents a hydrogen atom or a C₁₋₆-alkyl group and/or wherein

40

45

5



10 wherein L_1 represents a halogen atom, preferably fluorine or chlorine and L_2 and L_3 each independently represents a hydrogen atom or a halogen atom, preferably fluorine and/or wherein

Hal represents a chlorine atom.

15 In a particularly preferred embodiment the triazolopyrimidine is 5-chloro-6-(2-chloro-6-fluorophenyl)-7-N-(4-methylpiperid-1-yl)-[1,2,4]triazolo[1,5-a]pyrimidine coded compound IA, and 5-chloro-6-(2,4,6-trifluoro-phenyl)-7-(2,2,2-trifluoro-1-methyl-amino)[1,2,4]triazolo[1,5-a]pyrimidine coded compound IB.

20 The adjuvants of the present invention can be included in the formulation or added in a suitable form with the preparation of the spray mix (tank mix). In this latter case, they are added preferably as a separate preparation with the other components
 25 such as a dispersing agent or an antifoam and, where desirable, with further adjuvants so as to ensure that they are homogeneously dispersed in the spray mix.

The present invention also relates to fungicidal formulations
 30 with at least one compound of formula I, adjuvants and/or carrier substances characterised by their containing, in addition to the conventional adjuvants and carriers, one or more adjuvants selected from the group consisting of

- 35
- a) non ionic water-soluble mixed polyalkoxylated aliphatic alcohol surfactants,
 - b) non-ionic water soluble ethoxylated aliphatic alcohol
 40 surfactants,
 - c) amine ethoxylates, and
 - d) micronized polymeric waxes.
- 45

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The fungicidal compounds can be applied as normal commercial formulations with adjuvants according to the invention, and where desirable, with additional components such as antioxidants and emulsion agents.

5

The appropriate relative amounts of active ingredient and the water-soluble adjuvant lie, in accordance with the invention, between 100:75 and 100:100,000, preferably between 100:90 and 100:50,000 and, more preferably, between 100:125 and 100:5,000.

10 In general and within certain limits, the fungicidal efficacy can be enhanced to a higher degree by the addition of larger amounts of the adjuvant.

In a preferred embodiment the adjuvant is added to the tank mix
15 together with the triazolopyrimidine as a formulation.

The present invention also relates to a kit for the preparation of a spray mixture consisting of two separate containment:

20 1) a containment which comprises at least one fungicide of formula I and conventional inert ingredients and carriers;

2) a containment which comprises at least one adjuvant selected from the group consisting of

25

a) non-ionic water-soluble mixed polyalkoxylated aliphatic alcohol surfactants,

30

b) non-ionic water soluble ethoxylated aliphatic alcohol surfactants,

c) amine ethoxylates, and

d) micronized polymeric wax.

35

In a preferred embodiment said kit will consist of two bottles with dispensing means which allow the easy and correct addition of the active ingredient (1) and the adjuvant (2) to the tank mix.

40

Recommended doses for various applications are known for the fungicidal compounds of formula I where the efficacy can be enhanced in accordance with the invention. Addition of the adjuvants suggested here can (depending on the active ingredient, the adjuvant
45 and their amounts) reduce the amount of active ingredient per hectare required in these recommendations by half or more, whe-

reby it becomes possible to control additional diseases at reasonable doses.

In a preferred embodiment the adjuvants in combination with the
5 fungicide of formula I are applied at rates of 40 to 4000 ml/ha, preferably 50 to 3000 ml/ha, in particular 60 to 2000 ml/ha.

An important advantage is the rapid onset and the high persistency of activity on use of the new additives. This enlarges the
10 period for application of the fungicide and, hence, makes it more useful.

The fungicidal formulations according to the present invention can be used in combination with said additives prophylactically
15 and curatively.

The adjuvants according to the invention, the compounds of formula I, and usual adjuvants and carriers can be processed to the preferably fluid or dispersible solid formulations known in the
20 art, for example, as solutions, emulsions, wettable powders (WPs), suspension concentrates (SCs), emulsion concentrates (ECs), low volume or ultra low volume preparations and water dispersible granules (WGs).

25 As well as fluid and/or solid carries or solubilising agents such as organic solvents like ketones, alcohols, fluid aliphatic, aliphatic or aromatic compounds, fine natural or synthetic silicates or carbonates, the preparations usually contain ionic and/or non-ionic surfactants which function as emulsion, dispersing
30 or wetting agents. Antifoam and antifreeze agents may also be added. Suitable adjuvant and carriers substances are described in the literature and well known to the persons skilled in the art.

A composition according to the invention preferably contains from
35 0.5 % to 95 % by weight (w/w) of active ingredient.

A carrier in a composition according to the invention is any material with which the active ingredient is formulated to facilitate application to the locus to be treated, which may for
40 example be a plant, seed or soil, or to facilitate storage, transport or handling. A carrier may be a solid or a liquid, including material which is normally a gas but which has been compressed to form a liquid.

8

Aqueous dispersions and emulsions, for example compositions obtained by diluting the formulated product according to the invention with water, also lie within the scope of the invention.

5 Of particular interest in enhancing the duration of the protective activity of the compounds of this invention is the use of a carrier which will provide slow release of the pesticidal compounds into the environment of a plant which is to be protected.

10

Examples of formulations according to the invention are shown in the following formulations A and B:

Formulation A: Suspension concentrate (SC)

15

| Component | Amount [g/l] | Ingredient |
|---------------------|--------------|---------------------------------|
| active ingredient | 200.0 | Compound IA |
| dispersant | 30.0 | Morwet® D425 ¹ |
| dispersant | 15.0 | Pluronic® PE 10500 ² |
| 20 antifoam agent | 2.0 | Rhodorsil® 426 R ³ |
| structure agent | 1.0 | Rhodopol® 23 ³ |
| preservative | 2.0 | Proxel® GXL ⁴ |
| structure agent | 5.0 | Veegum T ⁵ |
| 25 antifreeze agent | 40.0 | propylene glycol |
| water | to 1000 ml | |

¹ Witco Corporation, Houston, USA

² Tensid-Chemie, Köln / BASF AG, Ludwigshafen, Germany

30 ³ Rhodia GmbH, Frankfurt, Germany

⁴ Zeneca GmbH, Frankfurt, Germany

⁵ Vanderbilt, Norwalk, USA

The SC formulation described above is mixed before application with water to give a spray mix with the desired concentration of
35 active ingredient. A non-ionic surface-active agent selected from the water-soluble mixed polyalkoxylated aliphatic alcohol class, in particular Plurafac® LF300 (250 g/l), is added to the resulting tank mix.

40

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Formulation B: Suspension Concentrate (SC)

| | Component | Amount [g/l] | Ingredient |
|----|-------------------|--------------|---------------------------------|
| | active ingredient | 200.0 | Compound IA |
| 5 | dispersant | 30.0 | Morwet® D425 ¹ |
| | dispersant | 15.0 | Pluronic® PE 10500 ² |
| | preservative | 2.0 | Proxel® GXL ³ |
| | antifoam agent | 5.0 | SAG 220 ¹ |
| 10 | structure agent | 0.8 | Rhodopol® 23 ⁴ |
| | structure agent | 5.0 | Vegum Pro ⁵ |
| | water | to 1000 ml | |

¹ Witco Corporation, Houston, USA

15 ² Tensid-Chemie, Köln / BASF AG, Ludwigshafen, Germany

³ Zeneca GmbH, Frankfurt, Germany

⁴ Rhodia GmbH, Frankfurt, Germany

⁵ Vanderbilt, Norwalk, USA

The SC formulation described above is mixed before application
 20 with water to give a spray mix with the desired concentration of
 active ingredient. A non-ionic surface-active agent selected from
 the water-soluble mixed polyalkoxylated aliphatic alcohols, in
 particular Plurafac® LF 300 (150 g/l) and additionally a non-ionic
 surface-active agent selected from the water soluble polyethoxy-
 25 lated aliphatic alcohol class, in particular Lubrol 17A17 (150
 g/l) is added to the resulting tank mix.

It is also an object of the invention to suggest a method for the
 control of phytopathogenic fungi, characterised by the use of the
 30 compounds of formula I, in particular formular IA in combination
 with one or more adjuvants selected from the groups consisting of

- a) non-ionic water-soluble mixed polyalkoxylated aliphatic alco-
 hol surfactants,
- 35 b) non-ionic water soluble ethoxylated aliphatic alcohol
 surfactants,
- c) amine ethoxylates, and
- d) micronized polymeric waxes.

40 Plant diseases that can be combated with the fungicidal formula-
 tions according to the present invention diseases caused by Asco-
 mycete fungi, such as Erysiphales as for example Erysiphe
 cichoracearum or Uncinula necator, and Dothideals as for example
 Venturia inaequalis or Septoria tritici (Mycosphaerella gramin-
 45 cola).

10

For a more clear understanding of the invention, specific examples thereof are set forth below.

The test results described below demonstrate the enhancement in
5 fungicidal efficacy of triazolopyrimidines of formula I by the addition of adjuvants according to the invention.

Example 1

10 Greenhouse Evaluations for Curative and Residual Fungicidal Activity

The formulated compound (see formulation below) was prepared as an aqueous suspension using concentrations of 100, 20 and 4 ppm
15 active ingredient (a.i.) and was applied to greenhouse plants using a single-nozzle overhead rack sprayer at an application rate of 200 litre/ha. Within the 200 l/ha the compound was alternatively in-tank mixed with 1000 ppm of adjuvant(s) (as given in tale of results). In case two adjuvants were added to the
20 compound, the concentration of each adjuvant was 500 ppm.

Barley seedlings (var. 'Golden Promise') and wheat seedlings (var. 'Kanzler') were grown to the primary leaf stage (ca. 1 week old) in 6-cm-diameter pots in the greenhouse. Plants for both cu-
25 rative and residual tests were sprayed at the same time with inoculations of the pathogens being done in different days.

For curative tests, barley and wheat plants were inoculated 2 days prior to compound treatment by dusting with conidia of *Blumeria* (*Erysiphe*) *graminis* f.sp. *hordei* or *B. graminis* f.sp. *tritici* to create powdery mildew diseases. Plants were kept in
30 the greenhouse until treated. After treatment, the plants were returned to the greenhouse and kept there until powdery mildew disease symptoms/signs developed on untreated plants.

35 Plants were then evaluated for percent disease on the treated primary leaves. For curative rust tests, wheat plants were inoculated 2 days prior to compound treatment by spraying with a ure-diniospore suspension in 0.05 % aqueous Tween 10 (1 mg spores per
40 ml) of *Puccinia recondita*, kept in a moist infection chamber for one day then moved to the greenhouse until treated. After treatment the plants were kept in the greenhouse until disease symptoms/signs developed on a untreated plants. Plants were then evaluated for percent disease on the treated primary leaves.

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For residual tests, plants were treated first and then kept for 4 days in the greenhouse before being inoculated with the pathogens as described for curative tests. Inoculated plants were kept in the greenhouse until disease symptoms/signs develop on untreated plants. Plants were evaluated for percent disease on the treated primary leaves.

Disease control efficacy was calculated from the percent disease values using the following formula:

10

$$\% \text{ disease control} = 100 - \frac{\% \text{ infected leaf area in treated plants}}{\% \text{ infected leaf area in untreated plants}}$$

15

Table I gives the means of the efficacy (%control) of the three concentrations of compound IA used. This is accepted because the adjuvant concentrations were the same at all the compound a.i. concentrations used.

20

The composition of formulation R in Table I is

Formulation R: Suspension Concentrate (SC)

25

| Component | Amount [g/l] | Ingredient |
|-------------------|--------------|-----------------------------|
| active ingredient | 100.0 | Compound IA |
| dispersant | 20.0 | Atlas G5000 ¹ |
| dispersant | 10.0 | Synperonic A ¹ |
| antifoam agent | 3.0 | Rhodorsil® 426 ² |
| preservative | 2.0 | Proxel® GXL ³ |
| structure agent | 3.0 | Rhodopol® 23 ² |
| antifreeze agent | 50.0 | propylene glycol |
| water | to 1000 ml | |

35

¹ Uniqema, Everberg, Belgium

² Rhodia GmbH, Frankfurt, Germany

³ Zeneca GmbH, Frankfurt, Germany

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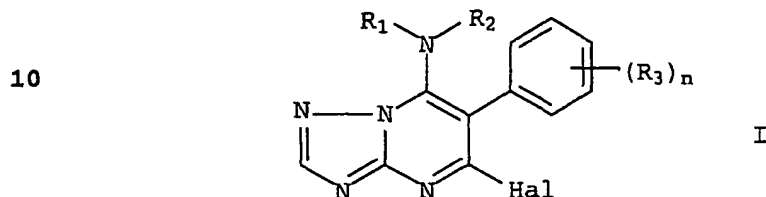
Table I

| Treatment | Mean % Control Over 3 Rates (100-20-4 ppm) of Compound 1A | | | | | | | |
|--|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | WPM* | | | WLR* | | | BPM* | |
| | 2 Day Curative | 4 Day Residual | 2 Day Curative | 4 Day Residual | 2 Day Curative | 4 Day Residual | 2 Day Curative | 4 Day Residual |
| Formulation A | 16 | 42 | 48 | 10 | 21 | 14 | | |
| Formulation A & Pluarafac LF 300 (1000 ppm) | 49 | 40 | 69 | 28 | 69 | 30 | | |
| Formulation A & Lubrol 17A17 (1000 ppm) | 43 | 33 | 72 | 15 | 38 | 26 | | |
| Formulation A & Pluarafac LF 700 (500ppm) + Lubrol 17A17 (500 ppm) | 42 | 40 | 79 | 33 | 38 | 28 | | |
| Formulation A & Pluarafac LF 300 (500ppm) + Lubrol 17A17 (500 ppm) | 55 | 49 | 78 | 38 | 57 | 43 | | |
| Formulation A & Berol 381 (1000 ppm) | 52 | 47 | 72 | 23 | 54 | 38 | | |
| Formulation A & Ethimeen S 22 (1000 ppm) | 53 | 48 | 72 | 22 | 56 | 28 | | |
| Formulation A & Ceridust 9615 A | 29 | 45 | 62 | 27 | 35 | 32 | | |

* WPM = wheat powdery mildew; WLR = wheat leaf rust, BPM = barely powdery mildew

Claims

1. A concentrated aqueous fungicidal formulation for application
 5 to plants comprising at least one triazolopyrimidine of formula I



15

in which

R^1 and R^2 independently denote hydrogen or

20

C_1 - C_{10} -alkyl, C_2 - C_{10} -alkenyl, C_2 - C_{10} -alkynyl, or
 C_4 - C_{10} -alkadienyl,

C_3 - C_{10} -cycloalkyl, phenyl, naphthyl, or

25

5- or 6-membered heterocyclyl, containing one to
 four nitrogen atoms or one to three nitrogen atoms
 and one sulfur or oxygen atom, or

30

5- or 6-membered heteroaryl, containing one to
 four nitrogen atoms or one to three nitrogen atoms
 and one sulfur or oxygen atom, or

where R^1 and R^2 radicals may be unsubstituted or
 may carry one to three groups R^a ,

35

R^a

is cyano, nitro, hydroxyl, C_1 - C_6 -alkyl, C_1 - C_6 -halo-
 alkyl, C_3 - C_6 -cycloalkyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloal-
 koxy, C_1 - C_6 -alkylthio, C_1 - C_6 -alkylamino, di-
 C_1 - C_6 -alkylamino, C_2 - C_6 -alkenyl, C_2 - C_6 -alkenyloxy,
 C_2 - C_6 -alkynyl, C_3 - C_6 -alkynyloxy and C_1 - C_4 -alkylene-
 dioxy; or

40

R^1 and R^2 together with the interjacent nitrogen atom repre-
 sent a 5- or 6-membered heterocyclic ring,
 containing one to four nitrogen atoms or one to
 three nitrogen atoms and one sulfur or oxygen

45

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atom, which may be substituted by one to three R^a radicals;

R³ represents halogen or C₁-C₆-alkyl or C₁-C₆-alkoxy;

n represents an integer from 0 to 5; and

Hal represents halogen

together with one or more adjuvants selected from

a) non-ionic water-soluble mixed polyalkoxylated aliphatic alcohol surfactants,

b) non-ionic water soluble ethoxylated aliphatic alcohol surfactants,

c) amine ethoxylates, and

d) micronized polymeric waxes,

the adjuvant is present in an amount sufficient to provide a ratio of the compound of formula 1 to adjuvant at 100:75 to 100:100.000 in the applied formulation.

2. The formulation according to claim 1 comprising an additional fungicidal compound.

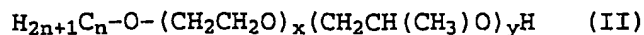
3. The formulation according to claim 1 or 2, wherein the relative proportion of the triazolopyrimidine of formula I to adjuvant a, b, c and d is from 100:90 to 100:50,000.

4. The formulation according to claim 1 to 3, wherein the relative proportion of the triazolopyrimidine of formula I to said adjuvant a, b, c and d is from 100:125 to 100:5,000.

5. The formulation according to claims 1 to 4 in form of an aqueous suspension concentrate (SC) and said non-ionic water-soluble mixed polyalkoxylated aliphatic alcoholsurfactant (a) is a multi-branched aliphatic C₈₋₁₈ alcohol alkoxylated with ethoxy and propoxy groups wherein the ethoxy to propoxy ratio is from 50:50 to 90:10.

6. The formulation according to claim 5 wherein the non-ionic water-soluble mixed polyalkoxylated aliphatic alcohol surfactant (a) is a mixed random or block oligomer of formula II

5



wherein

- 10 n is an integer from 8 to 18;
x is an integer from 3 to 10; and
y is an integer from 1 to 3.

7. The formulation according to claim 1 to 6 in form of an aqueous suspension concentrate (SC) and said non-ionic water-soluble ethoxylated aliphatic alcohol surfactant (b) is an aliphatic C₁₀₋₂₅ alcohol ethoxylated with 10 to 25 ethoxy groups.

8. The formulation according to claim 1 to 7 comprising one or more multi-branched aliphatic C₈₋₁₈ alcohols alkoxyated with ethoxy and propoxy groups wherein the ethoxy to propoxy ratio is from 50:50 to 90:10, and additionally one or more aliphatic C₁₀₋₂₅ alcohols ethoxylated with 10 to 25 ethoxy groups.

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9. A kit for the preparation of a spray mixture consisting of two separate containers, a first container containing a composition which comprises at least one fungicidal compound of formula I according to claim 1, conventional adjuvants and carriers; and a second container containing a composition which comprises one or more adjuvants selected from the groups consisting of

- 35 a) non-ionic water-soluble mixed polyalkoxylated aliphatic alcohol surfactants,

- b) non-ionic water soluble ethoxylated aliphatic alcohol surfactants,

- 40 c) amine ethoxylates, and

- d) micronized polymeric waxes,

10. A method for the control of phytopathogenic fungi on plants characterized by the use of fungicidal effective amount of a triazolopyrimidine compound of formula I according to claim 1.

45